

family Sittinæ, but is very remarkable, especially as, in its colouring, it is quite aberrant from its kindred. Mr. De Vis has made it the type of a new genus, and quite rightly so. There can be no possible doubt, however, as to the bird being allied to the Nuthatches (*Sitta*); it comes, in fact, very near the Australian genus *Sittella*. From this it differs principally in the bill, which is much shorter than the head, and has the culmen straight, and not curved upward, as in *Sittella*. The wing is very like that of the members of this genus, and has, like them, a light (white) patch about the middle of the inner web of the quills; but the tail is rather differently shaped, being graduated*, and not square. The feet do not show any important features, being quite Sittine; their colour, in De Vis's description of the genus, is stated to be crimson, but in the description of the species (p. 381), and on the original label of Signor Giulianetti, the feet are described as yellow. The whole bird appears to be more strongly built than the *Sittella*. The plumage is peculiar, not only in colouring, but also in being particularly soft.

The male bird has not yet been described, but possibly it will prove to be more brightly coloured than the female, especially about the face.

XVIII.—*On the Habits of the Mutton-bird of Bass Strait, Australia* (*Puffinus tenuirostris*). By the Rt. Rev. H. H. MONTGOMERY, D.D., Bishop of Tasmania.

FOR many years, as episcopal duties have called me to the Furneaux Islands in Bass Strait, I have given attention to the habits of what is locally called the "Mutton-bird." This Petrel is now adequately protected by an Act of the Tasmanian Parliament; and although some 400,000 young birds are salted down for consumption in a good year, chiefly by half-castes, yet there is no chance of the extinction of this species under present conditions. The day may come, indeed,

* By a misprint in the original description (*l. c.* p. 380) the tail is said to be obtusely "granulated," instead of "graduated."

when the population in these islands shall have increased so much that fresh legislation may have to be initiated, but that day has not yet arrived. There are also numerous islands near the Victorian coast at present absolutely unvisited, swarming with these birds. The absence of boat-harbours, and as well as of fresh water and wood, protects these summer visitors from depredators. The following facts may be taken as accurate; there is certainly no difference of opinion about them among the people who have spent their lives in these islands:—The Mutton-bird (*Puffinus tenuirostris*) appears with the greatest regularity about Sept. 17th in these waters, having come apparently from the direction of the South Pole; for, after inquiry of the captains of ships, I can discover no one who has met with them between May and September, although their numbers at other times can be computed only by millions. The obvious difficulty is that the season when they disappear is midwinter. It is also noteworthy that the whole period from Sept. 17th till the beginning of May is taken up with the rearing of their young. When they appear in September they are believed to have paired already, and they commence at once to scratch out their holes, the process lasting, with intervals, for six weeks. One bird is seen to be at work at a time, and always in the night. In the daytime they depart seaward. Indeed, so persistent is their desertion of the breeding-places by day that it would be quite possible for unobservant persons to live on these islands and to be unaware that the Petrels breed there at all, except perhaps at the season when the young birds take to the water. It is almost true to say that I never saw a Petrel in the daytime near their rookeries during the eight years that I have been visiting them. The universal belief is that these birds dare not alight on the ground in daylight because of the Gulls and Crows, for the length of their wings makes them unable to fly off flat ground. The Petrels depart about Nov. 1st, and are only seen occasionally till Nov. 20th, when they return in tens of thousands to lay their eggs, one for each pair, and they are laid almost on the same night in each locality. Islands differ, some being earlier than others, but

I have heard of no egg being taken before Nov. 18th. If the egg is taken there is good reason to believe that no other is laid ; but the birds, being very gregarious, return to sleep on the rookery, although they may have no young to tend. The Government permits consumption of the eggs on the island, but none are to be exported. As a matter of fact, the eggs are not fit to take after they have been laid three days. During the period of incubation the parents take it in turns to sit, exchanging positions after about a week. The young birds appear about Jan. 15th, and for a fortnight or so they are in danger from the snakes, which swarm on some islands, such as Chappell Island and Babel, and are entirely absent from others, such as Little Dog Island. The eggs, however, are safe, for the old birds can easily defend themselves when sitting. "Birders" say that birds and snakes are not found in the same hole ; but if a man seizes a snake in place of a bird he must pull it out, for to relax his grip is to court danger. There are always signs if there is a bird in a hole, for the parents carefully clean out the passage before they depart for the day and stuff the entrance with dry rookery-grass. In March the feathers of the young begin to grow ; before this they are fat, downy creatures. By Act of Parliament "birding" commences in Tasmanian lands on March 20th, and continues till the surviving birds fly away about the beginning of May. When the young Petrels are fully feathered the parent birds desert them altogether and depart seaward, the result being that the new generation is driven from the holes by hunger, and, without assistance from the old ones, they have to find their way to the water and to learn to fly and feed. All their travelling is done by night, for fear of their enemies (the large Gulls) ; but even so a great many are killed upon the water or upon the shore when too weak or inexperienced to escape. Still, in spite of the efforts of man and of winged bipeds, the sea is black with young birds in May, and fully one third of the young Petrels survive.

Let us now imagine ourselves standing on a rookery in the evening awaiting the arrival of the old birds as the sun

approaches the horizon. The islands where the Petrels breed are as a rule devoid of trees. They are sandy knolls covered with long grass, and seem useless, except to feed a few sheep. Chappell Island has an area of 1200 acres, Little Dog Island about 120 acres. These are fair specimens of the rookeries, and I have calculated that 40,000 holes per acre is not an exaggerated estimate. All day long the young birds are absolutely silent. The uninitiated might imagine that nothing edible existed underfoot, and that they stood upon a deserted rabbit-warren. Gazing out to sea on all sides, the watcher will not yet detect a single Petrel; not till the sun has set and the darkness is increasing is there any sign of the wonderful rush of birds, which, to a naturalist, is so fascinating a sight. The following figures, noted in the month of February, may be of interest:—6.35 P.M., not a Petrel in sight; 6.40, the first bird visible out at sea; 6.43, the sun disappeared; 6.48, sunset from the top of the lighthouse (Goose Island) and the light flashed out; 6.53 the first Petrel flew rapidly over the island without settling; 6.56, the numbers so great that I ceased counting; 6.58, the numbers become bewildering; 7.6, the numbers at their maximum—tens of thousands whirling, wheeling, flashing up from all sides, are whistling like bullets past one's head, till it seemed almost dangerous to stand up; 7.30, nearly all the birds had arrived. Then, and not till then, do the noises commence. The flight inward of the parent birds is conducted in absolute silence. Nothing, indeed, can be more weird than this rush of dumb creatures, so perfect in flight, but uttering no sound. As soon as the majority have arrived the ground emits the most extraordinary sounds—gurglings, groanings, and hoarse laughter. It must be confessed that there is no music in the note. On Chappell Island some 300,000 young birds would at this moment be receiving oil into their throats, poured into them by the parents, who thus give them the one meal the fledgelings receive in the 24 hours.

I now proceed to give the results of a whole night spent on a large rookery on Big Dog Island, under a full moon,

with a roaring westerly gale blowing over the island. It was March 1st, 1896. With watch and pocket-book I lay among the birds or walked silently about, noting what I now set down:—Up to 10 P.M. the underground noises continue, then silence falls on the rookery. The young birds are digesting; the parents are resting; but the latter are not by any means all in the holes, for some of them come out almost immediately and walk about among the long grass, and many of them sleep in the open air. I stepped silently about among them as they crouched on the ground: in no case did they put their heads under their wings, as many birds do. Often one of them walked up to my foot, and the slightest movement on my part sent him scurrying away like a rabbit, quite unable to fly off the ground. The moon was so bright that the rookery was almost as light as day. All night long a few score of birds flitted noiselessly over the rookery, just skimming the tops of the low bushes and passing within a foot of my face as I lay concealed. Hour after hour this graceful quadrille proceeded almost without sound of wings and as from creatures absolutely incapable of speech. At about 2.30 A.M. the rookery awoke. Noises came from all sides; a larger number of birds flashed silently over the ground. I walked towards a sandy ridge some thirty yards from the shore. Scores of birds walked up to the edge, then they raised their wings right over their backs till they nearly met at full stretch. They stood thus quivering in the wind for a few seconds, and then launched themselves into the air and were at once in flight. Close by a bird underground was sending a fountain of sand into the air as he cleaned out the hole preparatory to departure. At 3.15 A.M. the rookery was fully awake: hundreds of birds were leaving. I passed on and laid myself down within eight paces of a large rock with sloping sides and watched the birds as they clambered up it, and, extending their wings in the manner I have described, launched themselves into the air. In every case they faced the wind to perform this operation. At times, indeed, they were so numerous that they were jostling each other, but in perfect harmony. At

4.43 I counted a score on the rock together, and they were all silent; at the approach of daylight, 4.53, quite a rush of birds anxious to depart; 5.5, a few still left; 5.15, the last bird flew away from the rock I was observing. All round hardly a Petrel was visible: just a few were wheeling in mid-air. At 5.19 A.M. the last of these birds disappeared, and the rookery seemed to be absolutely devoid of life. At 5.23, just four minutes after the last Petrel had flown away, I heard the wailing of a Pacific Gull, and its form was visible in the distance. In a few minutes more a squadron of twenty of these creatures, accompanied by as many Crows, came sailing over my head, croaking and calling, and quartering the ground to see whether any belated bird could be discovered. At 5.41 the sun rose. I advance the theory, which is borne out by the experience of all the half-castes and white men who have spent their lives in these regions, that the Sooty Petrels come to feed their young only at night and in complete silence, and leave again before the other birds are awake, because only by this means are they safe from enemies in whose presence they are helpless when on the land. In the air, of course, they fear no such foes.

So far as Tasmania is concerned, these birds are found in greatest numbers in the Furneaux Islands. On Chappell Island, calculating solely by the young birds that had been taken by the half-castes, I computed that there were 990,000 there at night in the breeding-season. Babel Island is supposed to hold even more. Nor does the industry seem to affect the numbers. There are other rookeries on the islands north-west of Tasmania, and also at Port Davey and on the southern coast, but no systematic attempt is made to capture the birds for food, except in the Furneaux Islands, where the half-castes all live—the remnants of the old Tasmanian race—who make a trade of the salting and exporting these birds in barrels. They prefer the Petrels as food to anything else, and sell them at the average price of 7s. a hundred. A large family has been known to salt 1000 birds in a day, and their harvest lasts for about six weeks. Before the Government interposed and prevented

“birding” till March 20th, there was much danger that the colony would be extirpated ; but I consider that the present regulations are sufficient.

A few facts about the process of birding may be of interest. Temporary huts are erected on these islands, and wood and water stored there before March 20th ; for, as a rule, these islets are otherwise uninhabited. The workers start from their huts and work outward, but no regular division of ground is made. The “birder” thrusts his arm into the burrow up to the shoulder and secures the young Petrel by the neck, not by the leg. It is most important that the oil, of which the creature is quite full, should not exude from its mouth ; if it gets on the feathers these will not scald off. Having broken the bird’s neck, he transfers his booty to his left hand and holds it head upward. A dozen can thus be held in the left hand. They are then transferred to a stick, still head upward, and a child takes them to the women, who have tubs of boiling water ready. Before the bird is scalded it is emptied of its oil, which varies from a table-spoonful to almost half a pint at times. The oil is used in lamps and is also sought after for machinery. Enormous shoals of fish are attracted by the entrails of the birds, which are thrown into the sea ; but no one has time to fish, for nature has put a limit to the industry. The birds fly away in May.

I add, as a curiosity, a statement of a theory held by every inhabitant of these islands, which will probably cause amusement. Every “birder” says that as soon as the young bird emerges from its hole it commences to eat gravel, that it does so in order to ballast itself, and that no bird can swim upright or fly till it has devoured its ballast. They declare they have tested it times without number. That the birds eat gravel is certain ; but whether it is that they are ravenous or that a healthy bird needs some grit inside it before it can feed as the old birds feed, I have no means of deciding. It may be that here we are in the presence of a fact in bird-life which still requires explanation. In future years I hope to be able to time my visit to these regions so that I may

be present on Sept. 17th, when the Petrels first make their appearance; and again, on another occasion, when they come back to lay their eggs. An all-night watch will surely elicit facts worthy of observation at these periods.

XIX.—*Further Notes on the Birds of Zululand.*

By R. B. and J. D. S. WOODWARD.

OUR journey in Zululand of 1894–95 was described in a previous communication to ‘The Ibis’ (see *Ibis*, 1897, pp. 400–422). On the 24th February, 1896, we re-entered Zululand, this time leaving our cart and oxen behind; it being our intention to visit the “fly-country” in the Lubombo district, where cattle will not live. Meeting a transport-carrier, who was taking two waggons with corn to sell beyond the Black Umfolosi, where the natives were very short of food, we made arrangements with him to convey us on to the Umgome forest, just within the boundary of the Transvaal and a portion of the country obtained by the Boers from Dinizulu after the war. We went to Eshowe by the new waggon-road, and leaving that town we soon reached the Umhlatoosi, the valley of which looked scorched up, and commenced the big hill on the far side—the worst hill we have seen in Zululand, though the road is kept in good repair. We saw some patches of good corn on these high lands which had escaped the ravages of the locusts: the crops not having been completely destroyed, as was the case in the valleys. Passing through Melmoth and wading the Infule, a tributary of the Umhlatoosi, we shortly after sighted the Umfolosi, and, descending its long hill, crossed over and outspanned three miles beyond. The river was very low on account of the drought. Ascending another bad hill and crossing grassy highlands, where our driver shot a steinbok, we reached the Umbegamusa drift, also dried up, and came to a halt at the old camping-ground. We then went on to the Ivuna store, and thence up to the Nongoma heights, where the Magistracy is situated. In the distance we could see